La Crosse Technology ®

Heavy Weather Pro

Software User's Guide

(for 2800 series weather stations with USB connectivity)

Revision: 1.3

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OVERVIEW

Welcome to Heavy Weather Pro, the display and management software application designed for use with your La Crosse® Technology wireless personal weather station.

Heavy Weather Pro allows you to use a PC to monitor and record weather data received from your La Crosse® Technology wireless weather station, via a proprietary USB device that was provided with your 2800 series weather station.

You can monitor and record a variety of data collected by your weather station including both indoor and external values sampled by the various weather station sensors.

You can also review weather history data, and analyze trends and tendencies over time using the software's charts and graphing features.

The following pages detail the features and usage of the Heavy Weather Pro software application.

GETTING STARTED

Let's go over the things needed to prepare for installing the Heavy Weather Pro software application.

LICENSING

Heavy Weather Pro software is licensed to you free of charge with the qualifying purchase of a La Crosse® Technology hardware model. You may install it on one PC, and if desired, the same owner may install one additional copy on one notebook. Reasonable backups of the software may be made for disaster recovery purposes. If you transfer the hardware to a new owner, you must uninstall and transfer the software CD with the unit, safely destroying, to the reasonable extent possible, related backup media.

Legal Notices

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These statements are a summarized version of the license and legal notes. If you have further questions, please contact La Crosse Technology® Customer Support at 1-888-211-1923.

SYSTEM REQUIREMENTS

To use the Heavy Weather Pro software, the minimum requirements for your PC are as follows:

- Supported Operating Systems:
  - Windows XP (SP3 or greater)
  - Windows Vista (SP1 or greater)
  - Windows 7
- Internet service is required to download the software and manuals. Its ongoing use is only required if you intend to use the temperature upload features in the software.

SET UP YOUR WEATHER STATION HARDWARE

Before installing the Heavy Weather Pro software on your computer, you should complete the setup of your La Crosse Technology® wireless weather station. If you have not already setup your weather station, please take the time to do so before continuing with the installation of the Heavy Weather Pro software application.

For detailed instructions regarding the setup and usage of your La Crosse Technology® weather station hardware, please refer to the Quick Setup Manual provided with the weather station, or the weather station Operations Manual which can be found online at www.lacrossetechnology.com/2810.

If the weather station and all sensors are working properly, the weather station should be displaying values in all of the various data fields, as shown.

If your weather station is showing values like these, it is receiving data from the sensors and is ready to be connected to the Heavy Weather Pro software and your PC.

DOWNLOAD THE SOFTWARE

If you have not already done so, or do not have the latest version of the Heavy Weather Pro software application, you may download it for free.

To download the software, go to www.lacrossetechnology.com/2810.

Save the installation file to your computer (remember to make a note regarding where you save it – you'll need this later).

Note: I f you do not have internet access where you are installing the software, you will need to download the software from another location and save it to CD or disk, or contact Technical Support.

INSTALLATION

Ok - let's take a second and double check that we're ready to install our Heavy Weather software. At this point, we should have:

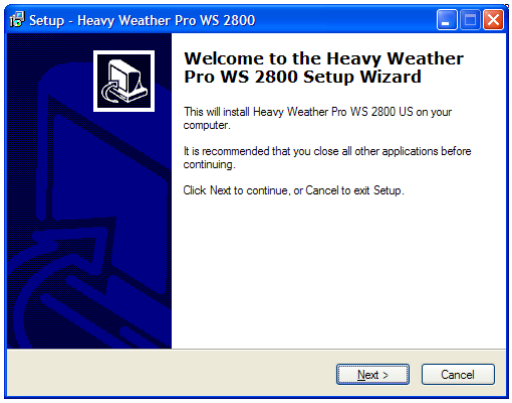
- The weather station itself set up and receiving data from the internal and external sensors.
- Verified that the computer meets the minimum system requirements.
- Downloaded or otherwise acquired the latest Heavy Weather Pro software application.

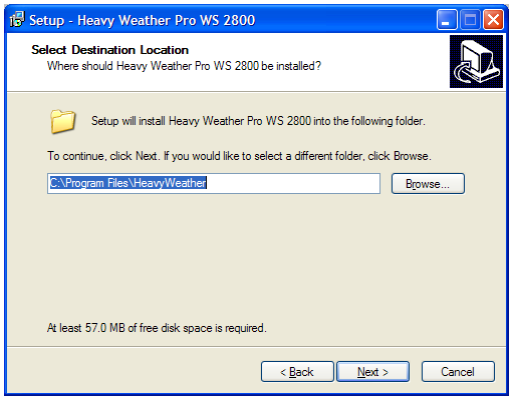
If you have met these requirements, we're ready to install the software. There are two parts to installing the Heavy Weather Pro software:

- Installing the Heavy Weather Pro software application.
- Installing or connecting the USB communication device to the PC.

INSTALLING THE HEAVY WEATHER PRO SOFTWARE

Locate the Heavy Weather Pro application file (this is the file you downloaded earlier). It is typically named **setup_hw_wv5.exe**. Double click the exe file to start the installation process. When the dialog below appears, click 'Next'.

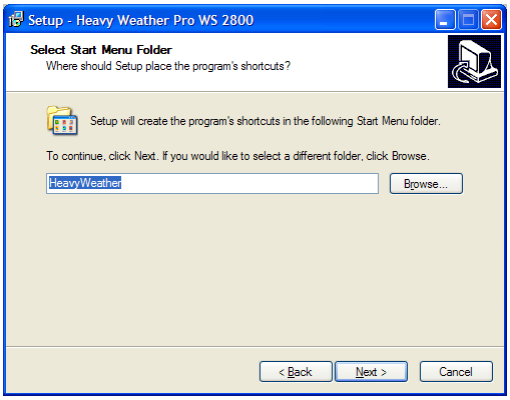

Setup - Heavy Weather Pro WS 2800
Welcome to the Heavy Weather Pro WS 2800 Setup Wizard
This will install Heavy Weather Pro WS 2800 US on your computer.
It is recommended that you close all other applications before continuing.
Click Next to continue, or Cancel to exit Setup.
Next >
Cancel

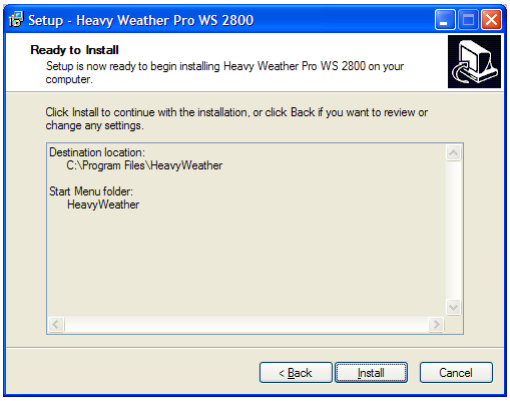

Setup - Heavy Weather Pro WS 2800
Select Destination Location
Where should Heavy Weather Pro WS 2800 be installed?
Setup will install Heavy Weather Pro WS 2800 into the following folder.
To continue, click Next. If you would like to select a different folder, click Browse.
C:\Program Files\HeavyWeather
Browse...
At least 57.0 MB of free disk space is required.
< Back
Next >
Cancel

Click "Next" again to accept the default location for installation.

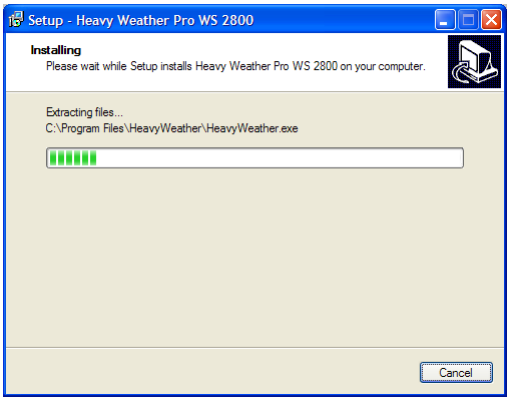
Note: If you are running a previous 3600 series weather station, install this software to a different location to avoid device conflict. To change the installation directory, just change the destination folder name.

Click 'Next' again to accept the default name for the Heavy Weather application.

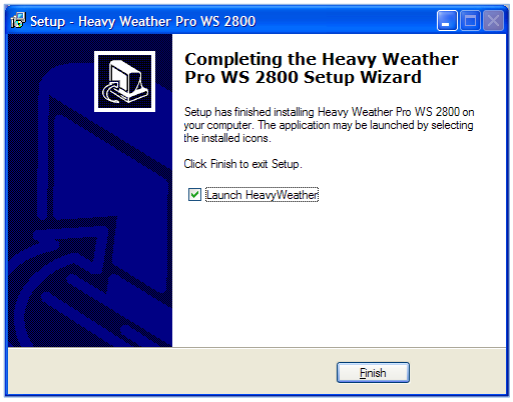

Setup - Heavy Weather Pro WS 2800
Select Start Menu Folder
Where should Setup place the program's shortcuts?
Setup will create the program's shortcuts in the following Start Menu folder.
To continue, click Next. If you would like to select a different folder, click Browse.
HeavyWeather
Browse...
< Back
Next >
Cancel


Setup - Heavy Weather Pro WS 2800
Ready to Install
Setup is now ready to begin installing Heavy Weather Pro WS 2800 on your computer.
Click Install to continue with the installation, or click Back if you want to review or change any settings.
Destination location:
C:\Program Files\HeavyWeather
Start Menu folder:
HeavyWeather
< Back
Install
Cancel

When the 'Ready to Install' dialog appears, click the 'Install' button to begin the software installation process.


Setup - Heavy Weather Pro WS 2800
Installing
Please wait while Setup installs Heavy Weather Pro WS 2800 on your computer.
Extracting files...
C:\Program Files\HeavyWeather\HeavyWeather.exe
Cancel

During the installation, the 'Installing' shows the installation progress.


Setup - Heavy Weather Pro WS 2800
Completing the Heavy Weather Pro WS 2800 Setup Wizard
Setup has finished installing Heavy Weather Pro WS 2800 on your computer. The application may be launched by selecting the installed icons.
Click Finish to exit Setup.
Launch HeavyWeather
Finish

When the 'Completing…' dialog appears, Heavy Weather Pro has finished installing.

Click "Finish" to complete the installation and start the Heavy Weather Pro application (if the checkbox labeled "Launch Heavy Weather" is selected). The installation has also added an icon to the desktop, and under Programs from which you can start the application at any time.

INSTALLING THE USB COMMUNICATION DEVICE

To install the USB communication device, simply plug it into any available USB port on the computer where you have installed the Heavy Weather Pro software application.

No driver installation is necessary because the USB device is self-registering. Once the Heavy Weather Pro software is installed and synchronized, it will automatically connect to the USB device.

Although the USB communication device can be installed on any USB port connected to your computer, using a non-powered USB hub or extension cable increases the chance for interruptions between the USB communication device and your computer. Where obstructions are an issue, a good quality 6ft USB extension cable can be used if it is directly connected to either a powered hub or a port on the computer itself.

For best performance, we recommend that the USB device be connected to a USB port directly on your computer. An externally powered USB hub can be used, but **avoid using a self powered USB hub or extension cable longer than 6ft.**These USB extension devices cannot generate sufficient power to maintain ongoing communication.

SYNCHRONIZING

WHAT IS SYNCHRONIZING?

Synchronizing is the process of telling the weather station and the Heavy Weather software how to talk to each other. The weather station and the USB communication device first go through an identification or introduction process. During this process, the weather station will send out a signal identifying itself with a special identification code. The USB device also sends out a signal with an identification code. When the two devices locate each other, they store the ID code of the other device, so they can 'lock onto' each other. This allows the weather station and the software (through the USB device) to connect and communicate again, should they ever lose connection with each other. It also means that once they are locked onto each other, they won't interfere with another weather station that may be nearby (this keeps the neighbors happy).

SYNCHRONIZATION CHECKLIST

Before we begin to synchronize the Heavy Weather Pro software with your La Crosse Technology® weather station, let's make sure that all of the components are ready to go.

1. The weather station is set up and receiving data.

   IF YOU HAVE NOT YET INSTALLED AND CONFIGURED THE WEATHER STATION, please refer to the installation and setup documentation for your weather station before continuing with the synchronization.

2. The USB communication device is installed properly.

   IF YOU HAVE NOT YET INSTALLED THE USB COMMUNICATION DEVICE, please refer to the section on installing the USB communication device and do that before continuing.

3. The Heavy Weather Pro software is installed.

   IF YOU HAVE NOT YET INSTALLED THE HEAVY WEATHER PRO SOFTWARE, please refer to the section on installing Heavy Weather before continuing.

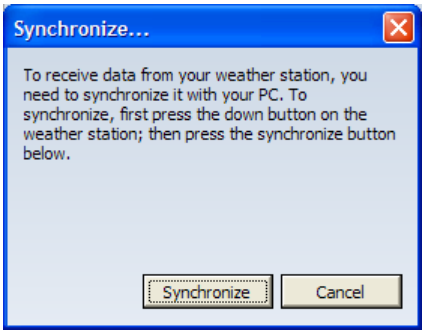
Ok, if the things listed above are complete, let's begin the synchronization of our weather station with our computer (USB device)! To do this, we need to:

1. Put the **weather station** into Synchronize mode.
2. Put the **software** into Synchronize mode.

PUTTING THE HEAVY WEATHER PRO SOFTWARE IN SYNCHRONIZE MODE

SYNCHRONIZING DURING (OR IMMEDIATELY AFTER) INSTALLATION

If you begin the synchronizing process directly from the installation, you will see a dialog on your computer like the one below.


Synchronize...
To receive data from your weather station, you need to synchronize it with your PC. To synchronize, first press the down button on the weather station; then press the synchronize button below.
Synchronize
Cancel

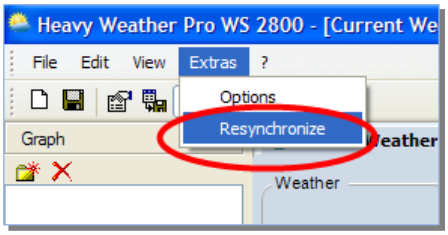
If you see this dialog, skip to the section on Putting the Weather Station in Synchronize Mode.

SYNCHRONIZING ANY TIME (OTHER THAN DURING INSTALLATION OF THE SOFTWARE)

If for any reason the weather station and USB communication device/software lose connection with each other (replacing the batteries, shut down of the computer, etc), or if you are setting up the Heavy Weather Pro software for the first time and did not synchronize with the software during installation, you can always redo the synchronization.

To start the synchronization process manually:

- Locate the menu bar at the top of the Heavy Weather Pro software application.
- Click the "Extras" menu choice.
- Select "Resynchronize".



When you click the Resynchronize menu option, the Synchronize dialog will appear.

Once we have the synchronize dialog displayed on your computer we are ready to put the weather station in synchronize mode.

DON'T CLICK THE SYNCHRONIZE BUTTON YET!

At this point, we need to leave the software portion of the synchronization process and get the weather station into synchronize mode.

The reason we need to now prepare the weather station for synchronization is that once the Synchronize button is pressed, the software will scan for a weather station for approximately 30 seconds.

The same is true of the weather station – once it is put into synchronize mode it will scan for a USB device for approximately 30 seconds. We need to have both the software and the weather station in synch mode at the same time for the synchronization to be successful.

Place the weather station approximately 3 to 6 feet from the USB communications device (the USB device is attached to your computer at this point).

Note: The software will refer to this as the 'USB-Stick'.

With the synchronize dialog displayed on your computer, continue to the section titled Putting the Weather Station in Synchronize Mode.

PUTTING THE WEATHER STATION IN SYNCHRONIZE MODE

To synchronize the weather station with our computer, we need to put the weather station into scan or synchronize mode.

QUICK INSTRUCTIONS

On the weather station, press and hold the button showing a down arrow until the weather station beeps (approximately 3-4 seconds). Next click the synchronize button on the software (the 'Synchronize' message box should still be displayed on your computer) and the weather station will attempt to synchronize to your PC. Within a minute or two, data from the weather station will display on the Current Weather tab on your computer.

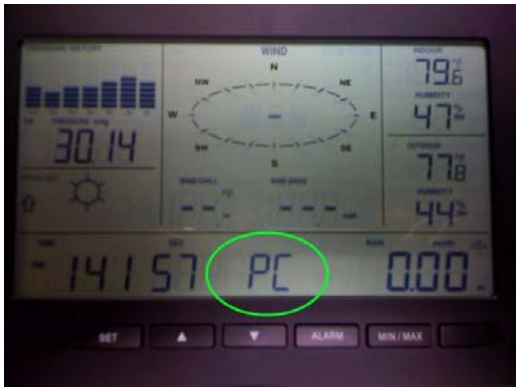
For detailed instructions, continue to the next section.

DETAILED INSTRUCTIONS

To tell the weather station to start communicating with the software, press and hold the button showing a down arrow until the weather station beeps (approximately 3-4 seconds).

When you hear the beep, this indicates that the weather station is now searching for the USB communication device.

While the weather station searches for a USB communication device, it will display '**SCn-PC'** next to the time.



The weather station should now be in scan mode. Now on your computer, click the Synchronize button.

When the weather station finds the USB device, it will beep and the display will show 'PC' in the lower line (unless the date is being displayed). The software will then update with the current weather data from the display.

This indicates that the weather station has successfully connected ("synchronized") with the USB communications device (software).

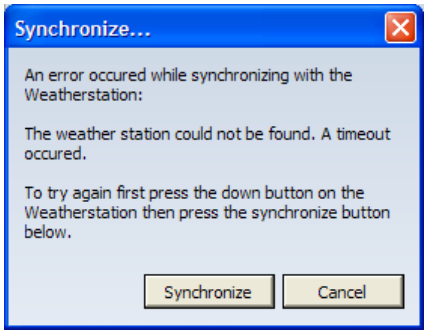
Note: If the date is being displayed, you will not see "PC".

Note: It can take up to 30 seconds for the synchronization to complete.

Note: You may have to try the synchronization process more than once.

IF SYNCHRONIZATION IS NOT SUCCESSFUL

If the synchronization process is not successful; you will see a message similar to the one to the right. At this point, you will need to retry the synchronization.


Synchronize...
An error occured while synchronizing with the Weatherstation:
The weather station could not be found. A timeout occured.
To try again first press the down button on the Weatherstation then press the synchronize button below.
Synchronize
Cancel

REPEATING THE SYNCHRONIZATION PROCESS

To repeat the synchronization process, we need to put both the weather station and the software into synch mode again. To do this press the down arrow on the display, then click the Synchronize button on the 'Synchronize message box (on the software).

Please refer to the preceding sections for details on the synchronization process.

OPERATION

This section covers the operation of your Heavy Weather Pro software application.

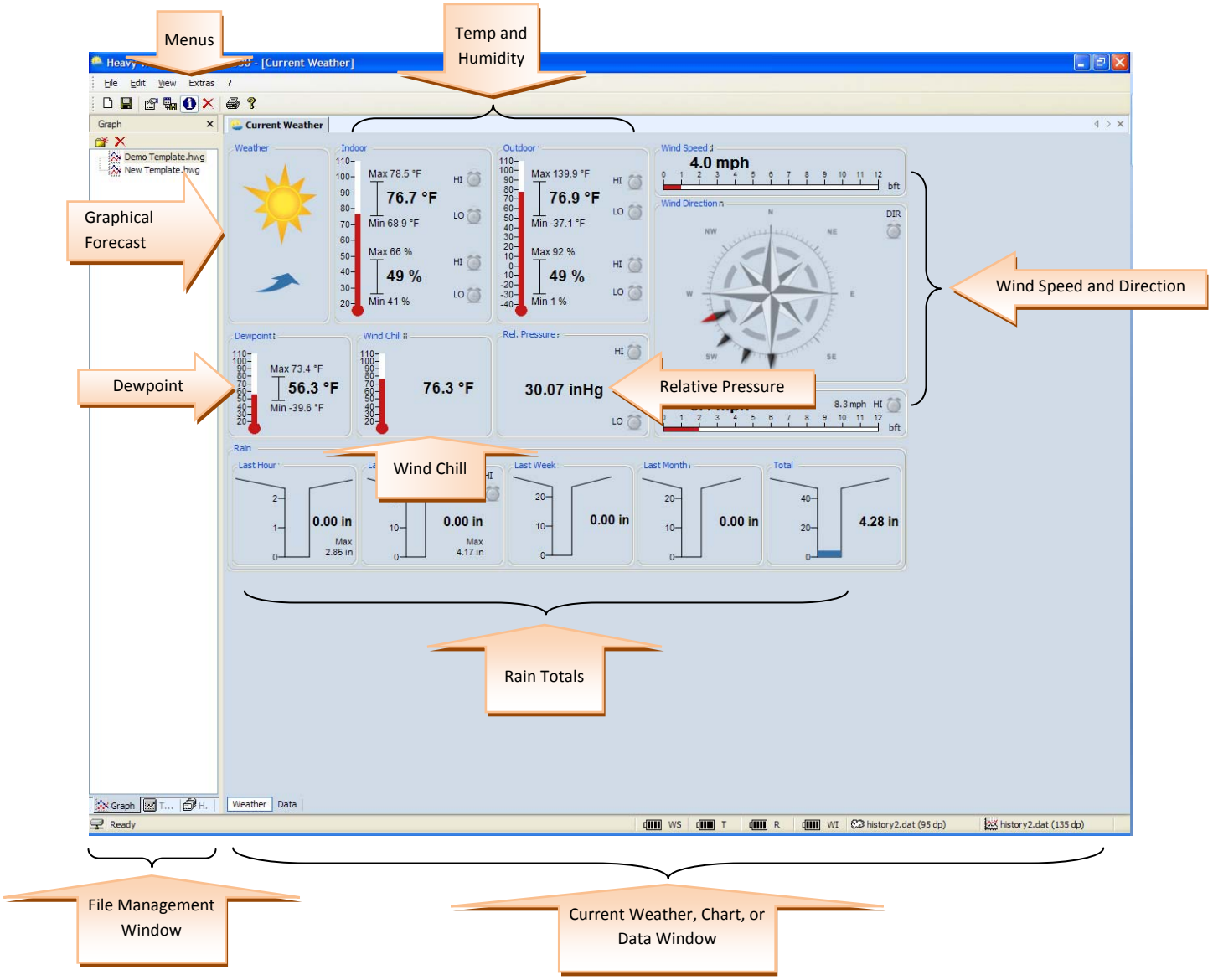
Note: In this document, we will not address the operation of your weather station, except where it pertains to the Heavy Weather software application. For more information regarding the operation of your La Crosse Technology® weather station, please refer to the documentation provided for your specific model.

MAIN WINDOW

The main window of Heavy Weather Pro is where you can review all of the weather attributes reported from your weather station.

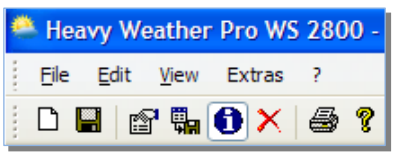
The left side of the main window is referred to as the File Management window. We talk more about this in the section on Charts and Graphs since that is where it is mainly used.

The right side of the main window is a tabbed dialog, which means it can display several windows at once, with each window distinguished by a tab at the top. When we are looking at Current Weather, this window will show all of the weather properties collected from the internal and external sensors. This section will talk about those properties in detail.

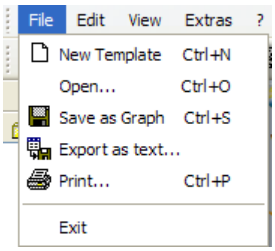


MENU

There are several menu options available from the Heavy Weather Pro main window. This section briefly describes the functions accessible through these menu options.



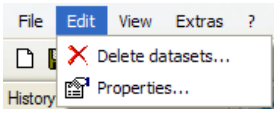
FILE

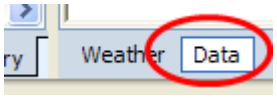


- New Template: create a new template file.
- Open: Open an existing saved template or graph file.
- Save as Graph: Save the current data plot as a Graph file.
- Export as text: Export the history records as a comma-delimited text file. (for import into a spreadsheet application – you must be on the Data tab page to export history information)
- Print: To print a current plot or Graph (Note: history data must first be exported to be printed).
- Exit: Close the Heavy Weather Pro application.

EDIT

- Delete Datasets:
  This allows you to delete one or more records from a dataset. To delete a record, make sure you have the Current Weather window displayed.





Then Select the Data tab in the lower left corner of the Weather/Data window.

By default the Data tab will open the current history.dat file which is actively receiving data from the weather sensors. If you wish to edit a different history file, then you need to open the History tab in the File Management window. The history records for that history file will be displayed in the Data window. Select the row(s) you wish to delete and click 'Delete datasets…'.

Warning: Double check that you are on the correct history.dat file before you begin deleting any data. In any event, we recommend that you maintain a saved copy of the history.dat file at all times.

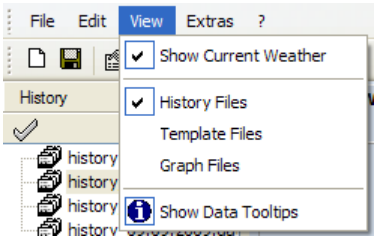
Note: You can also delete records from a history file by selecting them and hitting the Delete key on your keyboard.

- Properties:
  This option allows you to set/alter all properties of your template. For details see the Working with Template Files section.

  To view the properties of a template, you must select and open the template, then click Properties.

Note: If a graph is displayed, you can view its properties but they cannot be changed. A graph is a permanent chart of data points. If the properties of a graph need to be changed, a new graph must be created.

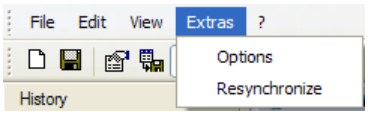
VIEW



- Show Current Weather: Show or hide the Current Weather window.
- History Files: show or hide the History tab in the file management window.
- Template Files: Show or hide the Template tab in the file management window.
- Graph Files: Show or hide Graph tab/windows in the file management window.
- Show Data ToolTips
  If this option is selected, whenever the mouse pointer passes over a graph line, a small pop-up window will display information about the data points including corresponding date, time, subject and value.

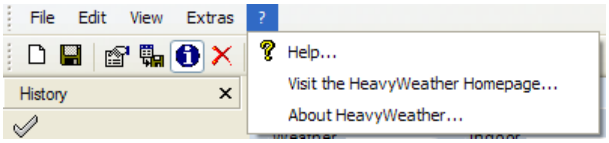
EXTRAS

- Options
  This is the general setting for the display of the language, unit measure and date format on ALL plot/graph/template. Once it is selected, it would affect all opened graphs and template. See the Options Window section for more details on available selections from this window.



- Resynchronize
  This allows you to initiate the synchronize process between the weather station and the USB communications device. Please refer to the section on Synchronizing for more details.

HELP



- Help: Open the Help Document
- Visit the Heavy Weather Homepage: http://www.heavyweather.info
- About Heavy Weather: Display copyright and version of the Heavy Weather Pro application.

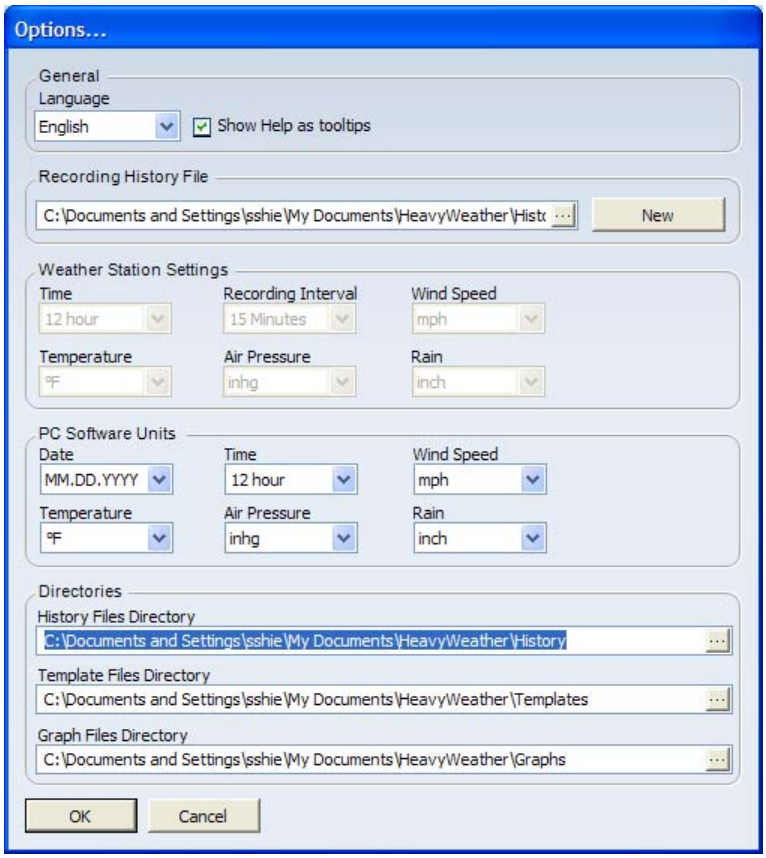
OPTIONS

From the Options window, you can configure all of the various Heavy Weather Pro application settings.

GENERAL SETTINGS

Language:
This option sets the language for all windows and dialogs within Heavy Weather Pro. If a new language is selected, the application must be restarted.

Show Help as ToolTips:
Check this box to enable tooltip help wherever it is available.



Recording History File:
This is the path to the history data storage file. You can change the location and name of the history data file here. If you change the filename, a new history data file will be created at the next interval (see Recording Interval).

New:
This button will create a new history file. The new history file will be placed in the location specified in the Recording History File textbox.

Example: If a file named history.dat (the default history file) already exists, the new file will be created with the name history1.dat. If history1.dat already exists, the new file will be named history2.dat and so on.

Creating a new history file will cause all current data to be written to this new filename.

If you plan to track and store data, we recommend that you use a filename other than “history” or “weather”. Typically, file names must start with a letter and not have spaces in them to work properly with other programs.

Note: You can also create a new history file by using the application menu options. Go to Extras, options, and click the square button at the end of Recording History file. Type a new filename and click ok.

WEATHER STATION SETTINGS

Several of the weather station’s properties can be configured from the software. These properties are listed under the Weather Station Settings section of the Options window. When these properties are changed and the Ok

button is pressed, the Heavy Weather Pro application will transfer those settings to the weather station (if the weather station and computer are synchronized and currently connected via the USB communications device).

Time:
Select either a 12 or 24 hour format for the time displayed on the weather station.

Recording Interval:
This option allows you to control how often Heavy Weather Pro will sample and store the data reported by the weather station. Note: Rain amounts are a total based on the stored amount and the update amount when the data is sampled.

Wind Speed:
Select the format in which the wind speed is displayed on the weather station (m/s (meters per second), knots, bft (beaufort), km/h (kilometers per hour), and mph (miles per hour)).

Temperature:
Select the format in which the temperature is displayed on the weather station (°C (Centigrade) or °F (Fahrenheit)).

Air Pressure:
Select the format in which the Air Pressure is displayed on the weather station (hpa (hectopascal) or inhg (inches of mercury)).

Rain:
Select the format in which the rain is displayed on the weather station (mm (millimeter) or inch).

PC SOFTWARE UNITS

Date:
This option specifies the format of the date when viewing the history records in the Data window (see Working with History files).

Time:
Select either 12 or 24 hour format for the time displayed in the history data file. This is seen when viewing the history data records in the Data window (see Working with History files).

Temperature:
Select the unit of measure used when displaying temperature in the Heavy Weather Pro application (°C or °F).

Air Pressure:
Select the unit of measure for displaying air pressure in the Heavy Weather Pro application (hpa or inhg).

Wind speed:
Select the wind speed measurement unit for display in the Heavy Weather Pro application (m/s, knots, bft, km/h, and mph).

Rain:
Select the format in which the rain is displayed in the Heavy Weather Pro application (mm or inch).

DIRECTORIES

History Files Directory:
This is the path where the history data file will be written. The path for the history data file can also be modified through the Recording History File setting. (*~\My Documents\HeavyWeather\History* by default)

Template Files Directory:
Represents the path where template files are stored. The default is *~\My Documents\HeavyWeather\Templates.*

Graph Files Directory:
This is the path where the graph files are stored. (*~\My Documents\HeavyWeather\Graphs* by default)

Note: It is recommended that the directories be kept on the C:\ drive.

SETTING ALARMS

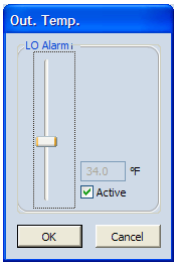
Your weather station offers the ability to set **alarm** values for many of the monitored properties. Heavy Weather Pro allows you to configure these alarms right from your computer. These alarm settings are then also transferred to the weather station.

To set an alarm, locate the icon that looks like an alarm clock next to the value you wish to set an alarm for.

Note that there is both a high and low alarm value for most of the properties, and be sure to choose the one correct one (or both) for your needs.

Note: Wind Direction and Wind Gust provide a single alarm value.

Double click the alarm clock icon and the alarm configure window for that property will appear.



Move the slider control up to increase the alarm trigger value, and down to decrease the trigger value. Click the "Active" checkbox to enable the alarm, click the Ok button, and you're all set! The alarm icon will appear green to indicate that it is active.

When the temperature reaches the trigger value that you have set, the weather station will beep and the alarm icon will flash red to alert you that an alarm has been activated.

Note: You can silence the beep by pressing the Alarm button on the weather station, but you need to remove the Active check mark in the Alarm configuration window to de-activate the alarm entirely.

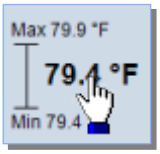
Reminder: Make sure to select the "Active" checkbox before clicking Save.

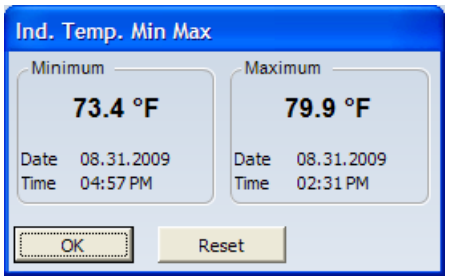
MIN MAX VALUES

The weather station can also store data regarding the minimum and maximum values for several properties. The actual **min** and **max** values are displayed in the main Heavy Weather Pro window, in the Current Weather tab.

You can also view the date and time that these values were recorded, by viewing the details of a particular min or max value. To view the details about the min and max values for a property, first locate the property you wish to analyze, and then move your mouse cursor over that area.

When you see your mouse cursor to change a hand pointer, double click, and the min max details window will appear.





From here you can review the details regarding the min and max values for the property, and also reset the min and max if you wish.

Note: In many cases, when you Reset the Min/Max values, the values go to zero briefly then quickly refill with the current data as the initial new Mon/Max values.

GRAPHICAL FORECAST

The graphical forecast section of Heavy Weather Pro provides a visual representation of what the weather is likely to be, based on the current and recent values of relative air pressure.

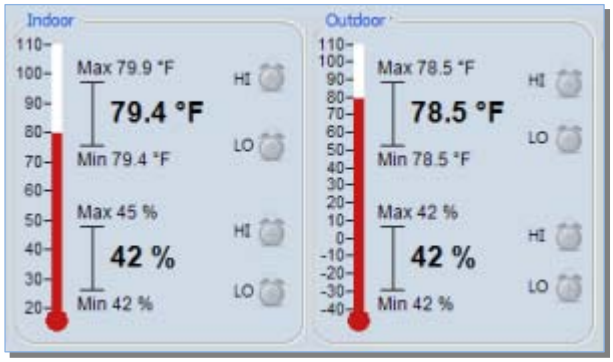
The upper image displays the expected weather condition, and the lower image represents the recent trending of the relative barometric air pressure.

There are three conditions that Heavy Weather Pro will display:

Fair Weather Rising Barometer	Partly Cloudy/Sunny Steady Barometer	Rain / Storm Expected Falling Barometer

TEMPERATURE AND HUMIDITY

The temperature and humidity section of the main dialog shows you:



- The current indoor and outdoor temperature.
- The current indoor and outdoor humidity levels.
- Min and Max values for both indoor and outdoor temperature.
- Min and Max values for both indoor and outdoor humidity.

To view or reset the min or max values for any of the temperature properties, please refer to the Min Max Values section.

To view or set alarm triggers for any of the temperature properties, please refer to the section on Setting Alarms.

DEWPOINT TEMPERATURE

WHAT IS THE "DEWPOINT"?

The dewpoint is the temperature where moisture in the air condenses into water. We commonly refer to the condensed water as dew, therefore the temperature at which the "dew" forms is called the dewpoint.

THE RELATIONSHIP BETWEEN DEWPOINT, TEMPERATURE AND RELATIVE HUMIDITY

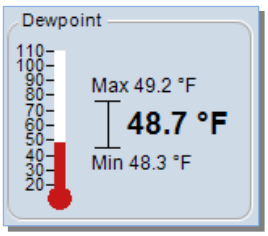
When the dewpoint is near to the current temperature, we have very high humidity. If the dewpoint is equal to the current temp, that is a relative humidity of 100%. This means that the air is completely saturated with water vapor.

When the dew point remains constant and the temperature increases, relative humidity will decrease.

As the air temp goes down, the dewpoint tends to follow. A low dew point can go along with a high temperature only at extremely low relative humidity.

HOW DOES THE DEWPOINT AFFECT ME?

We tend to be more uncomfortable as the dew point increases. As the body's temperature goes up, we begin to perspire and produce sweat to cool down. High humidity (and therefore a high dewpoint), will prevent the evaporation of sweat and reduces the body's ability to cool itself, and we feel hot and uncomfortable.



We also feel uncomfortable when dealing with low dew points, but usually a lower dewpoint is considered more comfortable because of the accompanying lower temperatures.

MIN AND MAX DEWPOINT

The minimum and maximum dew points are recorded and displayed in the Dewpoint section of the Heavy Weather Pro application. To view or reset the min and max dewpoint values, see the section on Min Max Values.

WINDCHILL

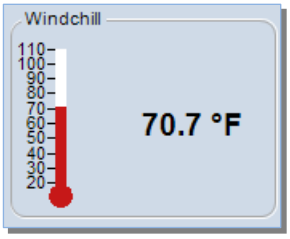
WHAT IS WIND CHILL?

Wind Chill is what the temperature "feels like" due to the wind. How much it effects us depends on both air temperature and wind speed. The wind chill temperature is more commonly called the **wind chill factor**.

Note: Wind Chill measurement methods vary over time, as established by the National Weather Service and other weather reporting authorities. This weather station uses the classical wind chill values.

HOW DOES WIND CHILL AFFECT ME?

Our bodies lose heat mainly through evaporative cooling and convection. The rate of heat loss by a surface depends on the wind speed above that surface: the faster the wind speed, the better the surface cools.



For inanimate objects, the effect of wind chill is to reduce any warmer objects to the ambient temperature more quickly.

For people, the body's response is to try to maintain surface (skin) temperature. This attempt to maintain the skin temp makes us feel colder. In certain conditions, wind combined with cold temperatures can actually cause the skin's temperature to decrease, and can even cause frostbite.

Note: Monitoring Wind Chill is an important safety factor in colder seasons.

RELATIVE (AIR) PRESSURE

WHAT IS RELATIVE PRESSURE?

Relative (also referred to as atmospheric) pressure is defined as the force per unit area exerted against a surface by the weight of air above that surface at any given point in the Earth's atmosphere.

Basically, even the atmosphere has weight. For most purposes, we can get air pressure by measuring the hydrostatic pressure caused by the weight of air above a certain point.

Low pressure areas have less atmospheric mass above their location, whereas high pressure areas have more atmospheric mass above their location. As elevation increases there is less overlying atmospheric mass, so that pressure decreases with increasing elevation.

AIR PRESSURE AND WEATHER FORECASTING

Air pressure is commonly used for weather prediction, as a region of high air pressure indicates fair weather, while low pressure tells us that rain or storms are more likely. When used in combination with wind observations, reasonably accurate short term forecasts can be made.

Each geographic area has its own 'normal' range of air pressure values. You can obtain this information from your local weather reporting station (e.g. the airport). With that information, you can calibrate the weather display to the reporting station (see Operations Manual for accessing the SET menu). When calibrated, the relative increase and decrease in air pressure values will correlate with your local media reports. If you do so, remember that any hardware reset will require the weather display to be re-calibrated.

Simultaneous relative/air pressure readings from across a network of weather stations allow maps of air pressure areas to be produced, which were the first form of the modern weather map when created in the 19th century. Isobars (lines of equal pressure), when drawn on such a map, gives a contour map showing areas of high and low pressure.

Localized areas of high atmospheric pressure act as a barrier to approaching weather systems, diverting their course. Low atmospheric pressure, on the other hand, represents the path of least resistance for a weather system, making it more likely that low pressure will be associated with increased storm activities.

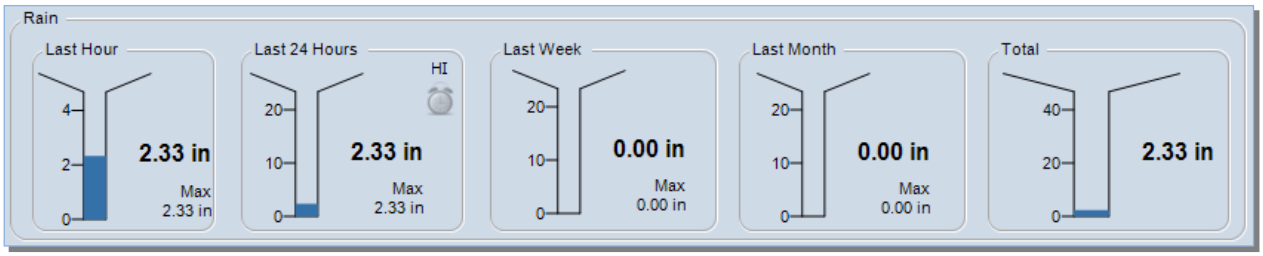
Typically with personal weather forecasting, we focus on the change in air pressure over time. The larger the change in pressure, especially if more than 3.5 hPa (0.10 inHg), the larger the change in weather can be expected. If the pressure drop is rapid, it indicates that a low pressure system is approaching, and there is a greater chance of rain. Rapid pressure rises are associated with improving weather conditions, such as clearing skies.

RELATIVE PRESSURE ALARM

You can configure an alarm to sound when the relative pressure goes above or below a certain point. For more details on how to set an alarm, see the section on Setting Alarms.

RAIN

The entire lower portion of the main Heavy Weather Pro screen is devoted to rainfall. This section will talk about each of these values and what they represent.



LAST HOUR

The last hour rain gauge represents the amount of rainfall reported by the weather station's external rain sensor in the last or previous 60 minutes.

You can reset this value, or view details about the last hour of rain, by placing the mouse cursor over the Last Hour section and double clicking.

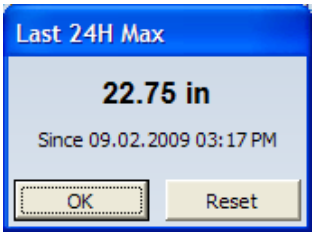
The Last Hour details dialog will appear showing the amount of rain collected in the last hour, as well as the date and time that the observation hour began.

To reset the last hour amount and begin again at zero, click the Reset button.

LAST 24 HOURS

The last hour rain gauge represents the amount of rainfall reported by the weather station's external rain sensor in the last 24 hours.

You can reset this value, or view details about the last hour of rain, by placing the mouse cursor over the Last 24 Hour section and double clicking.



The Last Hour details dialog will appear showing the amount of rain collected over the last 24 hours, and also shows the date and time that the 24 hour observation period began.

To reset the last 24 hour amount and begin again at zero, click the Reset button.

You can also set an alarm value, to warn when the 24 hour rain total surpasses a set amount. To more information regarding how to access and configure the Last 24 hour alarm, see the Setting Alarms section of this document.

LAST WEEK

The Last Week rainfall total represents the amount of rain that has been collected from Monday 12:00 AM to Sunday 11:59 PM ***OF THE PREVIOUS WEEK***. The Last Week value will update each Monday at 12:00 AM to reflect the last full week's total. Monday is used as this is the start date for international and business planning calendars.

Example: If today is Wednesday, rainfall that occurs today will not be included in the Last Week value until Monday at 12:00 AM.

Note: This value will be 0.00 until a full week has been recorded.

LAST MONTH

The Last Month rainfall total represents the amount of rain that has been collected from 12:00 AM of the first day of the month to 11:59 PM of the last day of the ***OF THE PREVIOUS CALENDAR MONTH***. The Last Month value will update on the first day of the month 12:00 AM to reflect the last calendar month's total.

Example: If today is the 15th of September, rainfall that occurs today will not be included in the Last Month value until 12:00 AM on the first day of October.

Note: This value will be 0.00 until a full month has been recorded.

TOTAL

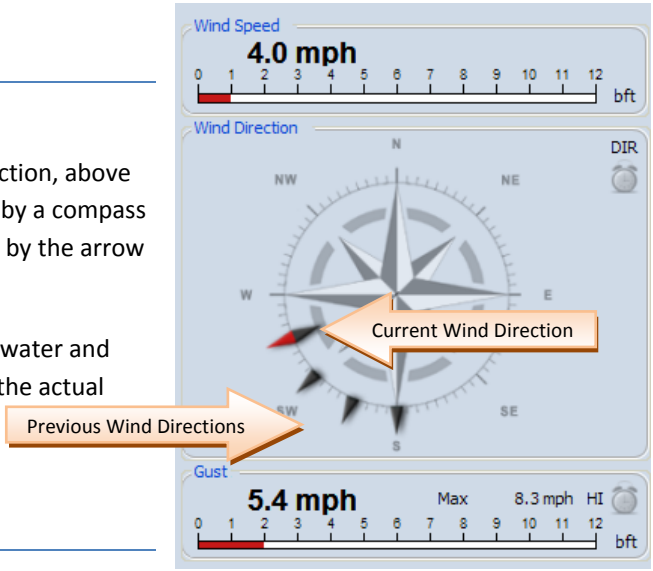
The total rainfall measurement is a stored value that continues to increment until it is reset. If you reset the other rainfall measurements, the total will not be reset.

The total is calculated independently of the other rainfall amounts. Therefore, due to the rounding calculations used to generate these values, daily, weekly and monthly totals recorded and tracked over time may be slightly different than the grand totals shown in this field.

The data tab rounds conservatively and therefore displays a lower total than the Current Weather tab. The history data eliminates rounding differences for analysis use.

WIND SPEED AND DIRECTION

Wind speed and direction is displayed in the upper right section of the main window.



CURRENT WIND SPEED

The current wind speed is displayed at the top of this section, above the Beaufort scale, with the wind direction represented by a compass in the middle. The current wind direction is represented by the arrow with a red tip.

Note: the Beaufort scale (bft) is the effect of wind upon water and has a high reading of 12. This will show differently than the actual wind speed reading.

WIND DIRECTION HISTORY INDICATORS

The compass image also displays the previous wind direction. There are five indicators displaying the last five reported wind directions. These are displayed with arrows with black tips.

GUST

In the lower section, the Gust value displays the highest wind speed recorded in the past 20 minutes.

MAX

The Max value represents the highest wind speed recorded since the max value was last reset. To reset the max wind speed value, see the section on min max.

ALARM

To set a high wind speed or wind direction alarm, see the section on setting alarms.

CHARTS, GRAPHS AND TRENDS

Heavy Weather Pro provides the ability to analyze the weather data collected from the weather station and its sensors using graphical charts of the data.

The software collects data from the weather station and stores it in a history data file (*~\My Documents\HeavyWeather\History\history.dat* by default). The stored data file is then used to generate different kinds of graphical reports for analysis.

OVERVIEW

The three main building blocks of graphical analysis in Heavy Weather Pro are the history file that stores the data records, the templates that define the properties of the charts/graphs and the graphs themselves.

THE HISTORY FILE

The history file is a data storage file generated by the Heavy Weather Pro application. It contains sets of weather data collected by the weather station during a period of time. We use this data to plot graphs over a specific period of time for analysis.

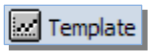
History files can be renamed, to preserve specific data such as the data collected during a big storm.

To write history data to a different filename, you must enter the new filename in the PC Software Settings section of Heavy Weather Pro.

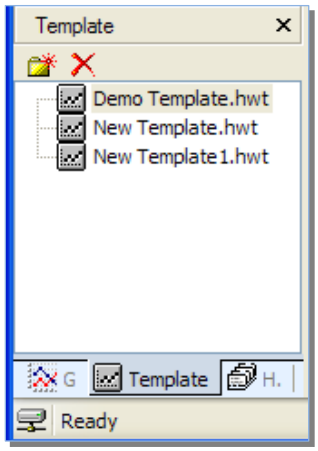
You can have as many different history files as you wish, but to use them for graphing purposes, they must be in the correct history folder - (*~\My Documents\HeavyWeather\History* by default).

WHAT IS A TEMPLATE?

To plot a graph you need to specify certain properties such as type of data (temperature, humidity, etc), duration of time, color and axis of the graph, minimum and maximum of the axis value, etc.

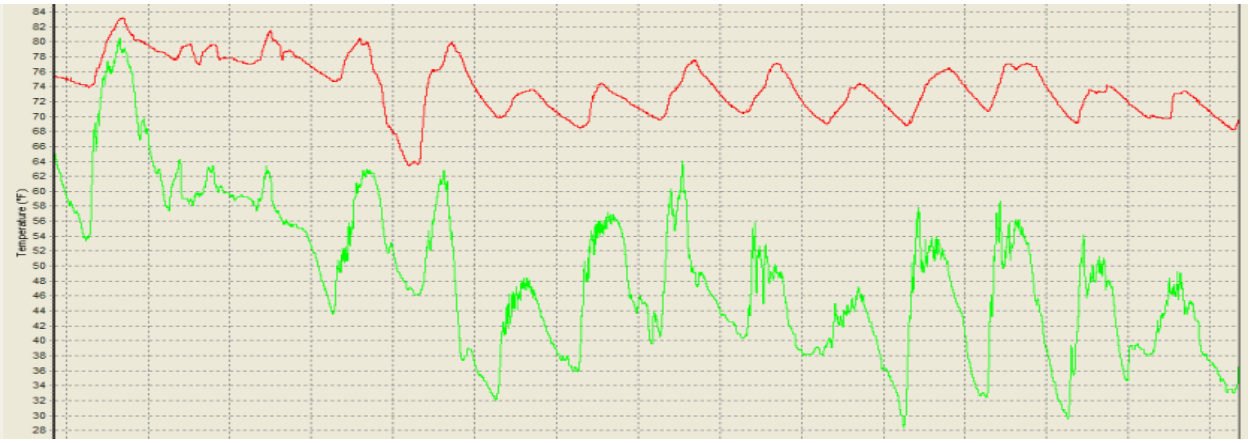


A template defines these properties and allows you use them again and again without setting them up each time. You can create and save an unlimited number of templates to suit your own applications. There is only one prerequisite to creating a template - you must have at least one history file in the history directory.



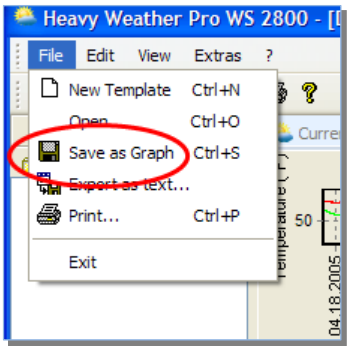
WHAT IS A GRAPH?

A graph is the resulting image created when we plot out and connect the data points in a particular history file.

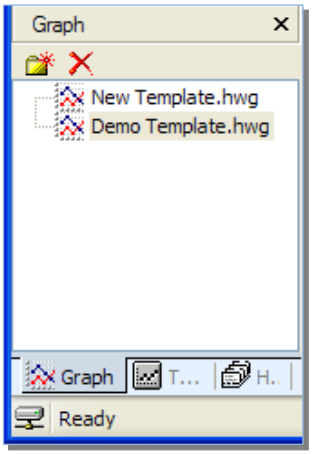


To create a graph, you must first select a history file and create a template.

Since the graph may change if you modify the template or change the history file, you should click the “Save as Graph” menu selection, or the Save icon on the toolbar if you want to keep a permanent copy of the current data.



It is recommended to save graphs with meaningful names, to avoid confusion later.

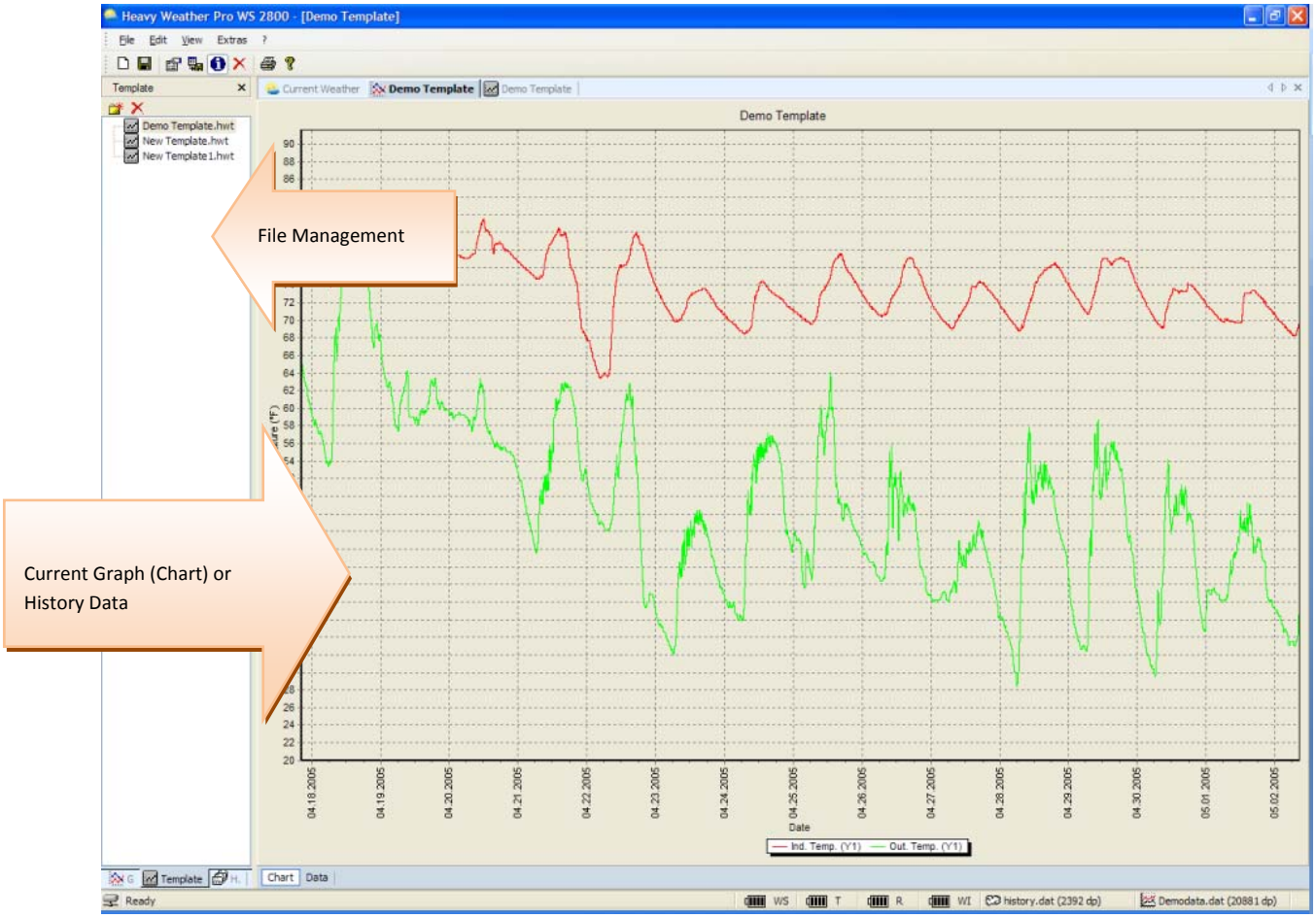


You can save multiple graphs and retrieve them for viewing or printing at later time. The graphs that have been saved in the default graph directory will show up in the file management window, when the Graph tab is selected.

You can load one of these graphs by double clicking the graph name.

MAIN WINDOW

There are two parts of the main window:

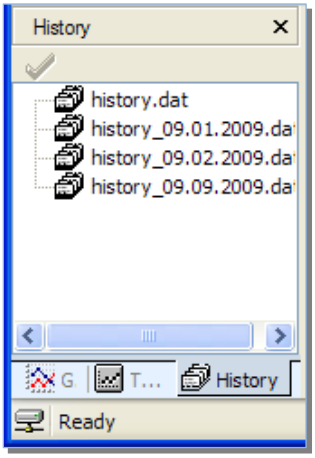


On the left is the file management section, which allows you to select and show the history, template or graph files. On the right is the chart \ data window, which shows you the current graph or history data.

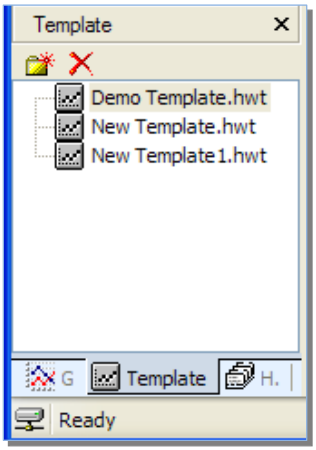
THE FILE MANAGEMENT WINDOW

HISTORY TAB

When the History tab is selected, it shows all history files located in the history folder (*~\My Documents\HeavyWeather\History* by default). You can select the current history file, or one that was previously saved to the history folder. For more details on using history files, see the Working with History files section.



TEMPLATE TAB



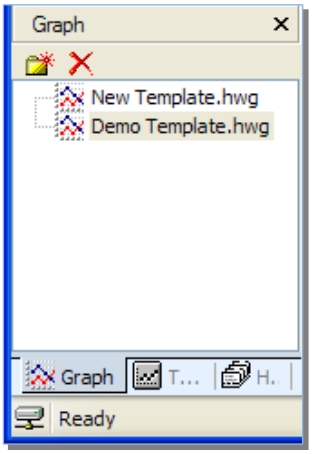
If the Template tab is selected, you will see a list of the templates that have been saved. These file are stored in the template folder, which is *~\My Documents\HeavyWeather\Templates* by default.

You can select an existing template by double clicking it. This will generate a graph in the Chart/Data window using the chosen template's settings with the data in the currently selected history file. For more detailed information on creating and using templates, see the Working with Template files section.

GRAPH TAB

If the Graph tab is selected you will see all of the saved graphs in the (*~\My Documents\HeavyWeather\Graphs* by default). To view a saved graph, double click the name and the saved data plot will appear in the Chart/Data window.

When a graph has been selected, the Data window will show the history data used to generate the selected graph.



Note: While a graph is selected, you will only be able to see the history data for that graph. Switching to the History tab and selecting a different history file will not change the data. To view a graph of a different history file, you must create a new template/graph (see the Working with Template Files section or the Working with Graphs and Template Files section for more details.

WORKING WITH HISTORY DATA AND FILES

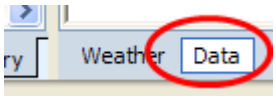
By default, the history file is named history.dat and is located in the *~\My Documents\HeavyWeather\History*directory. This directory is where the Heavy Weather Pro application looks for history files to display in the History tab of the File Management window.

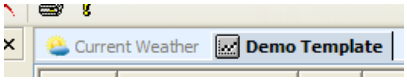
If you choose to save your history file to another location, it is recommended that you either set the History directory to that location, or copy your history file(s) to the default directory so that they can be used when working with templates and graphs.

VIEWING HISTORY DATA RECORDS

We can view history records from the current history data file, or from previously saved history data files.

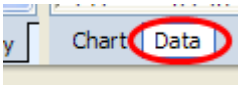
If you are viewing the Current Weather window, you can simply click the Data link in the lower left corner to see the history data records stored in the current history file.





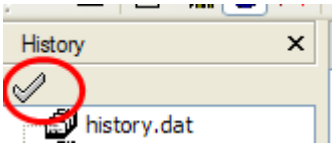
To view the data records stored in a previously saved history file, you must first select and open a template file.

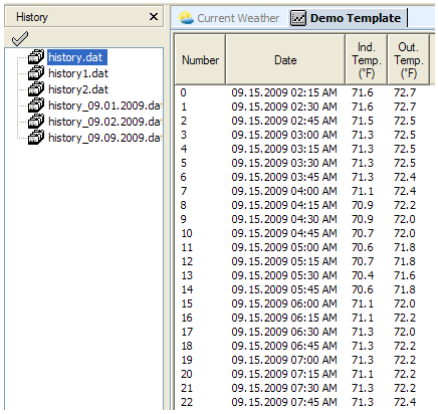
With a template file open in the main window, select the Data link in the lower left corner.



Note: If you have not selected a template in the main window, the Data window will only display history records from the current history file.

In the File Management window, select the History tab. Select a history file. To display the data records in the selected history file, double click the filename or click the checkmark at the top of the History tab.





The Data window will display the data records for the selected history file.

WORKING WITH TEMPLATE FILES

Template files define the properties needed to construct a graph from a selected history data file and it's data records (see What is a Template? for details). A sample template is provided for you, and is named Demo Template.hwt. This template gives you an idea of what a typical graph/chart template will contain.

To create a new template, click the File menu dropdown and select New Template. The template properties window will appear. From this window you can configure the various properties of your new template.

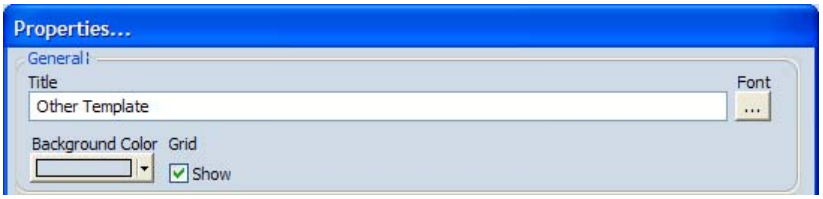
THE TEMPLATE PROPERTIES WINDOW

This is where we can choose what data will appear on the template, the color and style of the data lines, font and title of the chart/graph and other properties.

GENERAL PROPERTIES

Title:
This is the name that is displayed at the top of the Chart/Data window when this template is being viewed. This does not rename the template file itself, only changes the title that appears at the top of the window.

Font:
Select this to change the font of the axis labels.



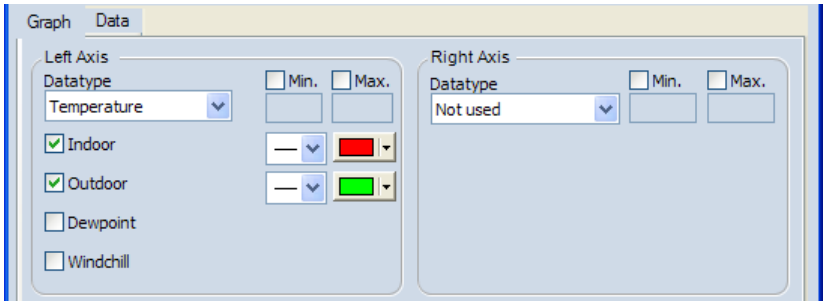
Background Color:
Select the color of the data chart background behind the data lines.

Grid:
Choose whether or not to show the gridlines in the chart.

GRAPH PROPERTIES

These properties allow us to choose what types of weather data (Temperature, Humidity, etc) that will be displayed by this template.

Left and Right Axis Data type:
You can have two vertical axis on a chart. Use this dropdown to select the type of weather data that will displayed from the left or right side of the template. Line color can be customized for each value by selecting the color dropdown.



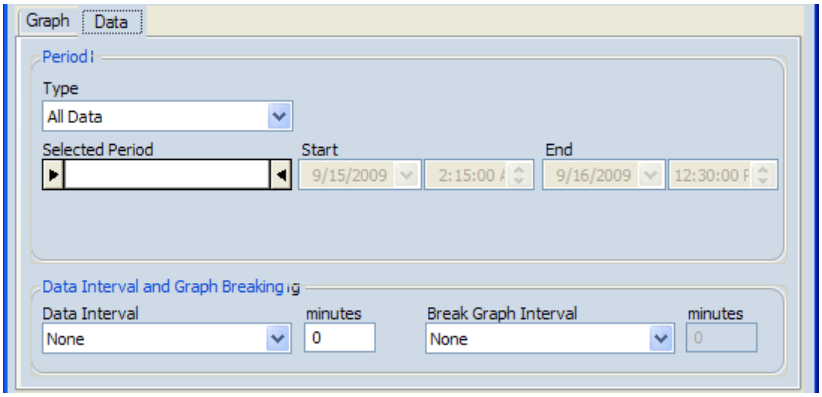
Min and Max:
Use the Min and Max checkboxes if you want to limit the data set to records within a specific range.

Indoor, Outdoor, Dewpoint and Windchill:
For some data types, you can choose to display more or less details. The details available will change depending on the data type selected.

DATA PROPERTIES

These properties allow us to choose the specific data records that will be displayed for the weather data selected in the graph properties.

Type:
Use this dropdown to select the time period over which the chosen weather data will be displayed. An example would be if you had selected Indoor Temperature in the Graph properties, here you could choose Current Day for the time period, and only the Indoor Temperature records from the current day will be displayed on the template.



Selected Period, Start and End:
These fields are provided to give you a better idea of the time period you have selected.

The Selected Period shows a graphical representation of when the time period occurs. The start and end date and time display the exact range of the data record set that will be used in the template.

If you choose a User Defined period type, these fields can be used to set the properties of the time period.

Data Interval:
The Data Interval setting allows you to define how close together the data points are represented on the chart. A shorter interval will place more data points in the chart, and will give a more detailed graph line.

Break Graph Interval (BGI):
This Break Graph Interval (BGI) property places a space, or break, of the selected time amount between the chosen data intervals. This can help define the data intervals, and make them easier to distinguish from each other. The BGI can be defined as this: if the gap between two consecutive data points is as big as, or bigger than, the chosen BGI then the data points will not be connected by a line.

An example of this would be if you have a recording interval of 1 minute, and have recorded data for a full 2 days. Then the weather station did not record any data on day 3 (perhaps the batteries were dead, etc). Then you replace the batteries and data is recorded for another full day on day 4. There is one day of data missing on day 3.

If you generate a chart showing the data from all four days with NO BREAK GRAPH INTERVAL, there will be a straight line connecting the last data point on day 2 (when the recording stopped) to the first data point on day 4 when the data recording started again. If we enable the BGI, a space will appear on the chart to represent the missing data.

Minutes:

The 'minutes' field can only be modified if you choose a Data Interval of User Defined. In this case, you can specify how many minutes apart you wish to place the data points. The chart can only be as precise as the original recording interval.

When you are using a pre-defined interval (any interval other than User Defined), the minutes field will be read only and display the chosen interval in minutes.

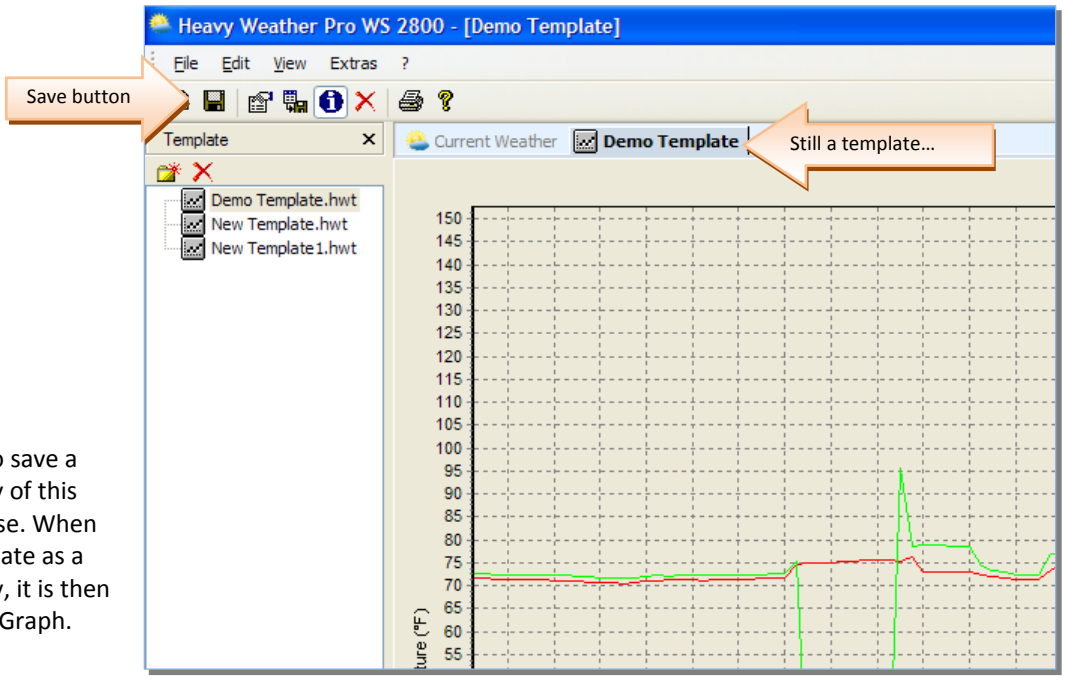
STATUS

The status section of the Properties window tells us if the data type and intervals we have chosen are valid. If we have selected to display a data type or a time period that is not available in our data records, the status line will turn red to indicate that the data cannot be displayed. If our selections are valid, the status text will be green.

SAVING A TEMPLATE AS A GRAPH

To display weather data in a chart of graph format, we first need to select the history data and create a template. If you have not yet done this, please refer to the sections on Working with History Files and Working with Templates. You can also choose to use the demo template to get some practice working with graphs.

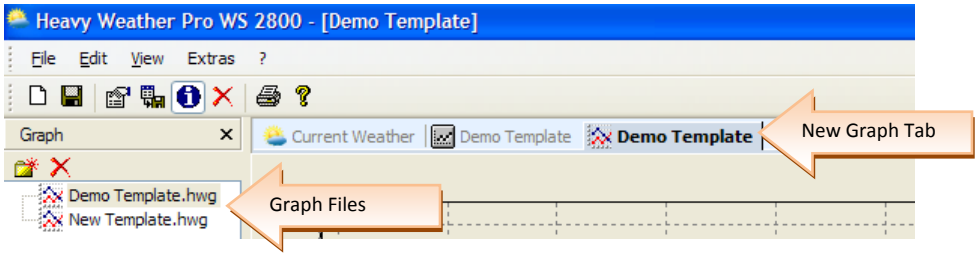
Once we have selected a history file and created a template, a data chart or graph is generated and displayed in the Chart/Data window. At this point however, the chart is still considered a template and the properties can be modified as needed.


Heavy Weather Pro WS 2800 - [Demo Template]
File Edit View Extras ?
Save button
Template
Demo Template.hwt
New Template.hwt
New Template1.hwt
Current Weather
Demo Template
Still a template...
150 145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55

We may want to save a permanent copy of this chart for later use. When we save a template as a permanent copy, it is then referred to as a Graph.

To create a graph, click the Save button (or the Save as Graph menu selection) while a template displayed in the chart/graph window.

A new tab will appear next to the template tab displaying the graph created from the template. This is the permanent copy of the template, now referred to as a graph.



The File Management window also switched to the Graph tab, and displays the new graph file.

WORKING WITH GRAPHS AND TEMPLATES

Now that we know how to create templates and graphs, let's go over some of the things we can do with the data that is displayed in our Chart window.

OPENING A GRAPH

To open a graph, select the Graph tab in the File Management window and double the filename. You can have several graphs and templates open at one time, and each will have a tab across the top of the Chart window to identify it.

IDENTIFYING THE CHART TYPE

Notice that template tabs

and graph tabs

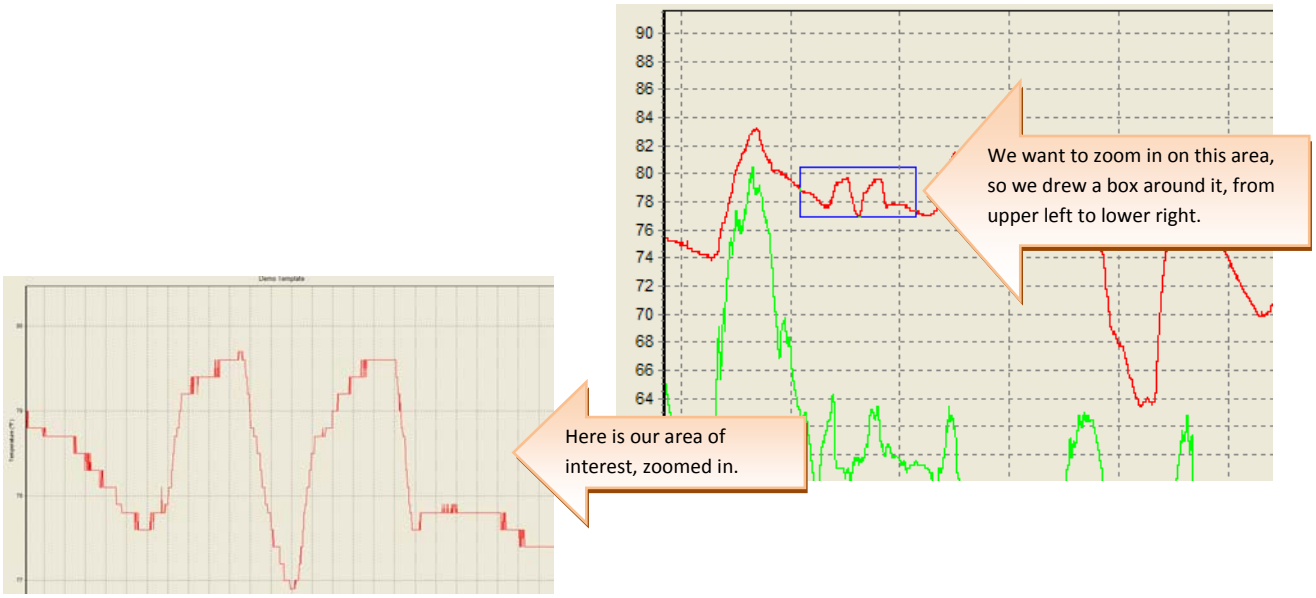
each have their own unique icon to identify what type of chart they represent.

MOVING THE CHART

You can slide the template or graph around in the chart window. To do this, click and hold the right mouse button anywhere on the chart window. With the right mouse still held down, move the mouse and the chart will move with it.

ZOOMING IN

To zoom in, move the mouse to a point on the chart that is above and to the left of the area you want to zoom in on. Press and hold the left mouse button and move the mouse down and to the right, drawing a blue box around the data you want to zoom in on.



When you release the mouse button, the chart will redraw the area you drew a box around at a zoom level that fills the chart window with your data.

ZOOMING OUT

To zoom back out, press and hold the left mouse button anywhere on the chart window and with the mouse button still pressed, move the mouse up and to the left. The size of the box you draw does not matter when zooming out, you will always zoom out the original size of the template or graph.

TROUBLESHOOTING / FAQ

HEAVY WEATHER PRO LOSES CONNECTION WITH MY WEATHER STATION OVERNIGHT.

Many computers temporarily disable or "put to sleep" some of their hardware if they sit idle for awhile. This includes USB ports, which is what Heavy Weather Pro (the USB communication device) uses to talk to your weather station. If Heavy Weather Pro loses contact with the USB device, it will be necessary to re-synchronize the weather station and USB device.

To re-synch, please refer to the section on synchronization.

HOW DO I EXPORT DATA FROM HEAVY WEATHER?

To export history data, first select the history tab in the File Management window. Then select the file you wish to export, and click the menu option Export as text. Choose a location to export the data file, and click Ok. Heavy Weather Pro will create a comma-delimited text file at the chosen location.

To import into Excel:

- In Heavy Weather 1.1, Double-click the history file name that you wish to export, from the left hand column. (If you do not have a list in the left, click View, History Files).
- Go to FILE and select EXPORT AS TEXT. Create a file name in the pop up box. Please note the location of this file. Ex. C:\Program Files\HeavyWeather\January.
- Open Excel. Select File, Open. When the open box appears, on the bottom under FILES OF TYPE select TEXT FILES.
- On the top where it says LOOK IN, select the file location. Ex. C:\Program Files\HeavyWeather
- With the Heavy Weather folder open, you should see the text file you just created (January).
- Select that file and a 3-step Wizard will appear. On the first screen choose DELIMITED. Then select 'Next'.
- On the second screen under Delimiters select SEMICOLON.
- Click 'Next', and the last box will appear. No need to change anything unless you would like the date formatted differently. Click finish. Your data should appear in Excel. You may need to adjust the cell width.

THE WIND, OUTDOOR TEMP, DEWPOINT AND WINDCHILL ARE BLANK

When the Wind, Outdoor temperature, dewpoint and windchill show no data, it is likely that the weather station has lost communication with its external sensors. Check the weather station to see if these properties are displaying no data there also. If so, it may correct itself within a few minutes, because the weather station will periodically attempt to re-connect to the external sensors. If the weather station does not reconnect to the sensors within 15 to 30 minutes, please refer to the user's guide for your weather station for instructions regarding

manually reconnecting the weather station to its sensors (initiate the re-learn process on the weather station (press and hold the up ^ arrow until the weather station beeps).

HEAVY WEATHER PRO DOES NOT RECONNECT TO THE WEATHER STATION

If for some reason the weather station loses connection with its external sensors, it will try to automatically reconnect to them (usually within a few minutes). During the time when the weather station is not connected to the sensors, the various data sections on Heavy Weather will also blank out, or display dashes (---).

If the weather station has lost connection with its sensors, and is now reconnected to them, but the Heavy Weather Pro software is still not registering the data, it may be necessary to resynchronize the USB device with the weather station. Please refer to the section on Synchronizing for detailed instructions.

WHY DO I SEE BIG SPIKES IN THE WIND OR RAIN DATA?

This is typically due to loss of connection to the weather station or the external sensors while the Heavy Weather Pro software is running.

I HAVE LOST CONNECTION WITH MY EXTERNAL RAIN AND/OR WIND SENSOR(S).

RAIN SENSOR

If the connection to the rain sensor has been lost, it may be due to low batteries. Please replace the batteries in your rain sensor and initiate the re-learn process on the weather station (press and hold the up ^ arrow until the weather station beeps).

WIND SENSOR

If the connection to the wind sensor has been lost, it may be due to a lack of direct sunlight. The wind sensor relies on sunlight to keep its solar cells charged. If the sensor has not been exposed to sunlight for more than three days, this may have caused it to lose connection with the weather station. Once the wind sensor has been exposed to sunlight, either by moving it unto direct sunlight or placing it under a bright lamp, it should reconnect to the weather station. If it does not reconnect on its own, initiate the re-learn process on the weather station (press and hold the up ^ arrow until the weather station beeps).

UNINSTALLING HEAVY WEATHER

To uninstall the Heavy Weather Pro software application, go to Start, All Programs, Heavy Weather and click the Uninstall link.